

**What is claimed is:**

1. A mixing tank for a fuel cell, comprising:
  - a container housing fuel for the fuel cell;
  - an absorbent member housed in the container, the
  - 5 absorbent member having a space;
  - an inlet flow path interconnecting the fuel cell and the container so as to conduct an exhaust from the fuel cell to the container and admix the exhaust with the fuel to form a mixture absorbed in the absorbent member;
  - 10 an exhaust flow path interconnecting the space and an outside of the mixing tank so as to conduct gas in the space to the outside; and
  - an outlet flow path interconnecting the absorbent member and the fuel cell so as to conduct the mixture absorbed in
  - 15 the absorbent member to the fuel cell.
2. The mixing tank of claim 1, wherein:
  - an inner end of the exhaust flow path reaches the space of the absorbent member.
3. The mixing tank of claim 1, further comprising:
  - 20 a gas-liquid separation membrane at an inner end of the exhaust flow path, the gas-liquid separation membrane blocking penetration of liquid and allowing penetration of gas.
4. The mixing tank of claim 1, wherein:
  - the space comprises a cavity formed in the absorbent
  - 25 member.
5. The mixing tank of claim 4, wherein:

the cavity is enclosed by the absorbent member.

6. The mixing tank of claim 4, wherein:

the cavity of the absorbent member is positioned substantially at a center of the container.

5 7. The mixing tank of claim 1, wherein:

the space comprises a gap formed between the absorbent member and the container.

8. The mixing tank of claim 7, wherein:

the exhaust flow path is opposed to the gap.

10 9. The mixing tank of claim 7, wherein:

the outlet flow path interconnects a substantial center of the absorbent member and the fuel cell.

10. The mixing tank of claim 1, wherein:

the container further comprises a projection fixing the  
15 absorbent member.

11. The mixing tank of claim 1, wherein:

the absorbent member is adhered to the container.

12. A mixing tank for a fuel cell, comprising:

a container housing fuel for the fuel cell;

20 an inlet flow path interconnecting the fuel cell and the container so as to conduct an exhaust from the fuel cell to the container and admix the exhaust with the fuel to form a mixture;

a swivel shaft including an outlet flow path and an exhaust  
25 flow path therein, penetrating a side of the container and being rotatably attached thereto;

a gas collector tube connected to and communicating with the exhaust flow path;

a mixture collector tube connected to and communicating with the outlet flow path, the mixture collector tube being substantially disposed opposite to the gas collector tube;  
5 and

a weight attached to the mixture collector tube so that the mixture collector tube is oriented downward and the gas collector tube is oriented upward.

10 13. A mixing tank for a fuel cell, comprising:

a container housing fuel for the fuel cell;

an inlet flow path interconnecting the fuel cell and the container so as to conduct an exhaust from the fuel cell to the container and admix the exhaust with the fuel to form  
15 a mixture;

an exhaust flow path interconnecting the container and an outside of the container so as to conduct gas to the outside;

an outlet flow path interconnecting the container and the fuel cell;

20 a gas collector flexible tube connected to and communicating with the exhaust flow path;

a floating member attached to the gas collector flexible tube so that an end of the gas collector flexible tube is projected upward from the mixture;

25 a mixture collector flexible tube connected to and communicating with the outlet flow path; and

a weight attached to the mixture collector flexible tube  
so that the mixture collector flexible is sunk in the mixture.

14. A fuel cell system comprising:

a fuel cell having an anode, a cathode and an electrolyte  
5 membrane put therebetween;

a container housing fuel for the fuel cell;

an absorbent member housed in the container, the  
absorbent member having a cavity therein;

an inlet flow path interconnecting the fuel cell and  
10 the container so as to conduct an exhaust from the fuel cell  
to the container and admix the exhaust with the fuel to form  
a mixture absorbed in the absorbent member;

an exhaust flow path interconnecting the cavity and an  
outside of the mixing tank so as to conduct gas in the cavity  
15 to the outside;

an outlet flow path interconnecting the absorbent member  
and the fuel cell so as to conduct the mixture absorbed in  
the absorbent member to the fuel cell; and

an air supply unit supplying air to the cathode.

20 15. A fuel cell system comprising:

a fuel cell having an anode, a cathode and an electrolyte  
membrane put therebetween;

a container housing fuel for the fuel cell;

an inlet flow path interconnecting the fuel cell and  
25 the container so as to conduct an exhaust from the fuel cell  
to the container and admix the exhaust with the fuel to form

a mixture;

a swivel shaft including an outlet flow path and an exhaust flow path therein, penetrating a side of the container and being rotatably attached thereto;

5 a gas collector tube connected to and communicating with the exhaust flow path;

a mixture collector tube connected to and communicating with the outlet flow path, the mixture collector tube being substantially disposed opposite to the gas collector tube;

10 a weight attached to the mixture collector tube so that the mixture collector tube is oriented downward and the gas collector tube is oriented upward; and

an air supply unit supplying air to the cathode.

16. A fuel cell system comprising:

15 a fuel cell having an anode, a cathode and an electrolyte membrane put therebetween;

a container housing fuel for the fuel cell;

an inlet flow path interconnecting the fuel cell and the container so as to conduct an exhaust from the fuel cell  
20 to the container and admix the exhaust with the fuel to form a mixture;

a swivel shaft including an outlet flow path and an exhaust flow path therein, penetrating a side of the container and being rotatably attached thereto;

25 a gas collector tube connected to and communicating with the exhaust flow path;

a mixture collector tube connected to and communicating with the outlet flow path, the mixture collector tube being substantially disposed opposite to the gas collector tube;

a weight attached to the mixture collector tube so that  
5 the mixture collector tube is oriented downward and the gas collector tube is oriented upward; and

an air supply unit supplying air to the cathode.